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(71) Applicant
Designed Architectural Lighting Limited

(Incorporated in the United Kingdom)

10 Bowling Green Lane, London, EC1R 0BD,
United Kingdom

(72) Inventors
Christopher Short
Rosemary Molra McIntosh

(74) Agent and/or Address for Service
Batcheller Kirk & Eyles
2 Pear Tree Court, Farringdon Road, London,
EC1R 0DS, United Kingdom

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(54) Lighting Installation

(57) A fluorescent light fitting adapted to be suspended below a ceiling so as to provide diffused illumination through a lower diffuser assembly 16, which has a smoothly curved profile to avoid abrupt changes in the illumination level, and at the same time to reflect some of the light upwardly from the inner surface of the diffuser so that it passes through a transparent cover 26 onto the ceiling. In this way it is possible to achieve well balanced levels of illumination across the ceiling and the fitting without abrupt changes between light and dark areas.

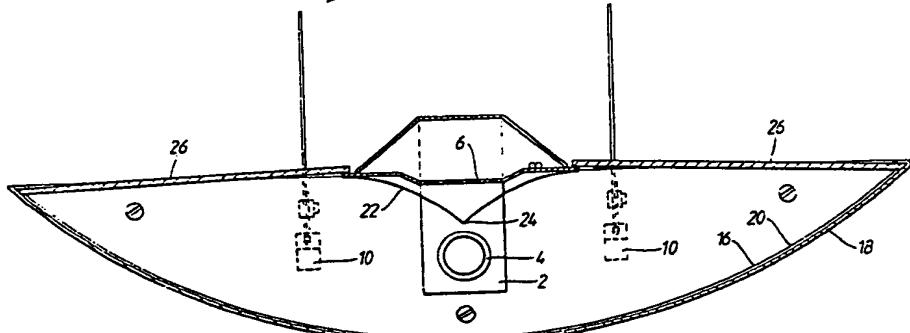


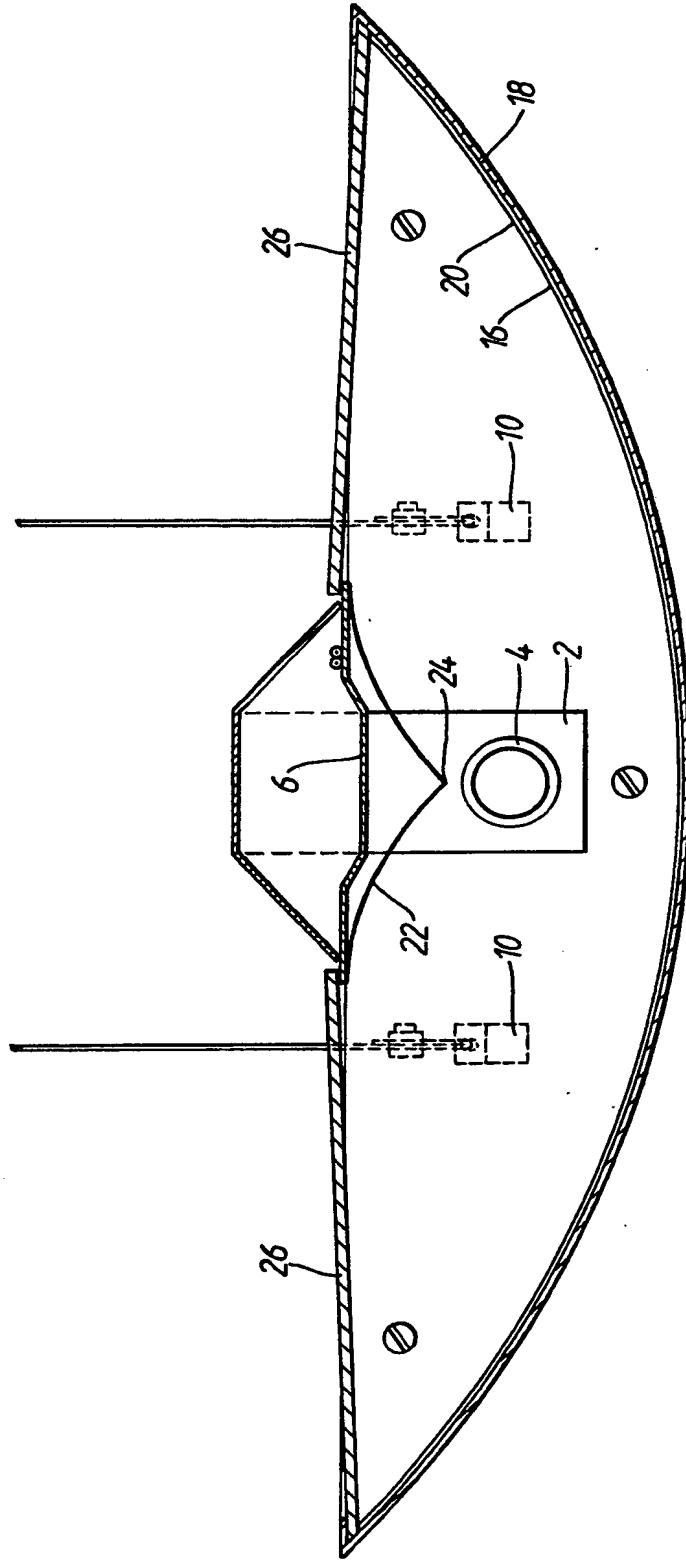
Fig.1.

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1982.

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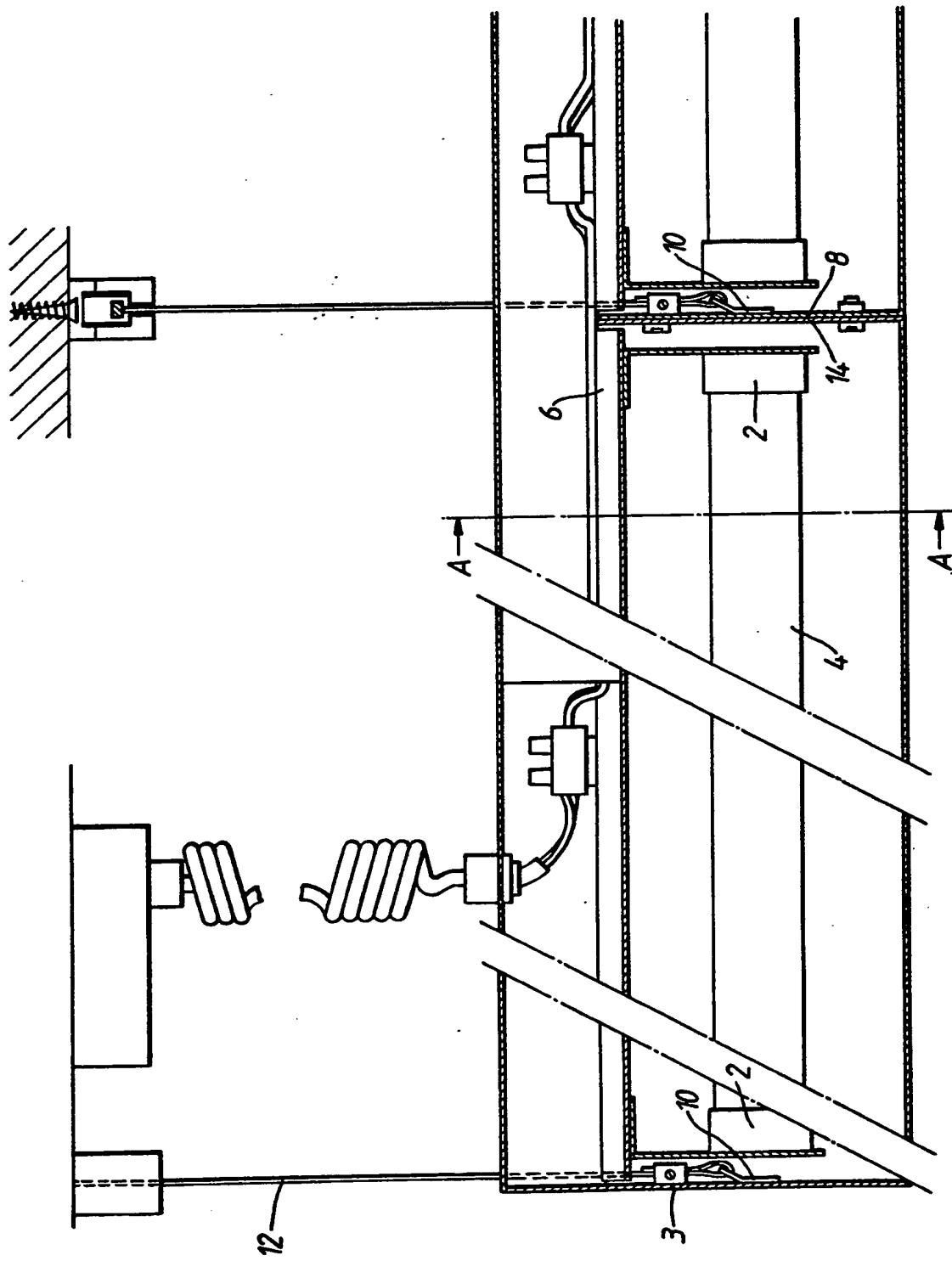
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Fig. 1.

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Fig.2.



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"Lighting Installation"

This invention relates to light fittings and particularly to fittings for fluorescent lamps, hereinafter referred to as "luminaires"

A common problem with lighting installations in offices, is related to the widespread use of visual display units. It is very difficult to arrange artificial lighting which is sufficiently even to avoid causing reflections on the screens of VDU's, and accordingly it is becoming more common, for such installations to include "uplighters", which direct light onto the ceiling so as to reduce the problem of veiling reflections.

However, installations of this kind can still cause problems of uneven reflections, caused by the contrast between the uplit ceiling, and the relatively dark underside of the "uplighter". Uneven distribution and high luminance patterns can also occur in areas with low ceilings.

Accordingly, the present invention seeks to provide a light fitting which provides a combination of upwardly reflected and downwardly diffused lighting, so as to minimise the contrast between the illuminated ceiling, and the underside of the light fitting.

To this end, the present invention provides a fluorescent light fitting including a mounting for a tubular fluorescent lamp, and an elongate diffuser/reflector extending parallel to and beneath the said mounting, and having a smoothly curved cross-section so as to avoid abrupt transitions of the level of illumination, across its surface.

The diffuser/reflector (hereinafter referred to as a "diffuser" for convenience) is preferably of such a

material and/or construction that its internal surface reflects a considerable proportion of the downwardly and outwardly incident light from the fluorescent tube, in a generally upward direction towards the ceiling upon which
5 the fitting is mounted, or from which it is suspended, in use, but also allows a suitably balanced proportion to be transmitted through the diffuser so that its lower surface does not appear dark, relative to the surface of the ceiling above it.

10 According to a further feature of the invention, in order to achieve an even illuminance pattern on the ceiling an elongate reflector may be arranged above the lamp and parallel to its axis so as to direct the light across the ceiling.

15 The dark patch which would normally occur when an opaque material is placed above the lamp is eliminated by reflected light from the lower reflector diffuser. A preferred embodiment of the invention, this upper reflector has a cusp-like cross-section, with the apex of the cusp
20 closely adjacent to the rear surface of the tube.

The diffuser may be of any suitable translucent construction. For example, it may comprise a sheet of fabric supported by a coextensive sheet of perforated metal, and in this case it has been found that a suitable level of
25 illumination is provided, if about 27% of the area of the coextensive sheet comprises perforations.

Alternatively, it may comprise an integral rigid structure of plastics material, such as acrylic, so long as the upper surface is reasonably reflective.

30 Where a rear reflector is also incorporated, this may comprise (for example) polished aluminium.

Preferably, the outer diffuser has a constant cross-section throughout its length, right up to each extreme end of the luminaire, so that a series of such
35 fittings may be installed end to end so as to provide a

continuous run of evenly illuminated surface. Preferably, the top of the fitting is covered by a dust cover of clear material, such as acrylic plastic.

One embodiment of the invention will now be
5 described by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a vertical cross-section through a fluorescent light fitting, taken on a plane at right angles to the axis of the tube mounting; and

10 Figure 2 is a vertical cross-section taken on a plane at right angles to the plane of Figure 1, coaxial with the tube mounting.

Referring to the drawings, suitable end cap mountings 2 of conventional form, adapted to receive a
15 fluorescent tube 4, are suspended from an elongate spine 6 of the fitting. The spine 6 terminates at one end in an end plate 8 which incorporates a pair of mountings 10 for suspension wires 12, whilst the other end plate 14 is adapted to be bolted to the end plate 8 of an adjacent
20 fitting, so as to effectively share its suspension mountings 10.

The lower surface of the fitting comprises a smoothly curved diffuser/reflector assembly 16, which in the embodiment illustrated comprises a perforated sheet of metal
25 18 supporting a translucent fabric material 20. Perforations in the metal sheet 18 comprise approximately 27% of its surface, and the fabric 20 has a suitable combination of translucency and reflectivity, so as to reflect a proportion of the light from the tube 4, upwards
30 onto the ceiling above the fitting, whilst transmitting a balanced proportion through the perforations of the metal sheet 18.

An elongate reflector 22 of polished aluminium is arranged behind the tube 4, and has a cusp like cross-
35 section with the apex 24 of the cusp positioned immediately

behind the axis of the tube. As a result, each of the elongate concave surfaces of the reflector acts to reflect upwardly incident light from the tube 4, back down towards the reflective surface of the fabric 20 of the diffuser, so 5 that it is returned in a generally upward direction.

A clear acrylic cover 26, is attached to the top of the fitting, to prevent the entry of dust.

The spine 6 also contains integral control gear for the lamp and the through wiring necessary if continuous 10 runs of luminaires are installed.

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CLAIMS

1. A fluorescent light fitting including a mounting for a tubular fluorescent lamp and an elongate diffuser extending parallel to and beneath said mounting and having a smoothly curved cross-section so as to avoid abrupt transitions of the level of illumination across its surface.
2. A fluorescent light fitting according to claim 1 in which the top of the fitting is transparent or translucent and the diffuser has a semi-reflective inside surface so that when the fitting is mounted adjacent to a ceiling, part of the incident light is reflected upwardly towards the ceiling whilst the remainder is transmitted through the diffuser, whereby the lower surface of the fitting and the ceiling are illuminated at similar levels.
3. A fluorescent light fitting according to claim 1 or claim 2 further comprising an elongate reflector arranged parallel to and above the lamp mounting and arranged to reflect upwardly incident light to avoid the appearance of a dark region behind the lamp.
4. A fluorescent light fitting according to claim 3 in which the upper reflector has a cusp-like cross-section, the apex of the cusp being so arranged that it is closely adjacent the upper surface of a tube mounted in the fitting.
5. A fluorescent light fitting according to any preceding claim in which the diffuser comprises a sheet of perforated metal.
6. A fluorescent light fitting according to claim 5 in which the diffuser further comprises a sheet of translucent fabric supported by the said perforated metal sheet.